



BADFISH CREEK WATERSHED (LR07)



The Badfish Creek Watershed lies in south central Dane County and in the northwest corner of Rock County and encompasses 85.5 square miles. The village of Oregon is the largest community (7,514 in 2000) in this rural watershed. The village's growth of 30.5% from 1995-2000, is rapidly changing the area's rural character to a suburban community. As the village and towns of this watershed continue to grow, stormwater management and construction site erosion control have become more important. For example, increased stormwater flows have caused flooding problems in part of the village.

A few municipalities are located within this basin, with a portion of the city of Fitchburg, the towns of Oregon and Rutland, and the village of Oregon. Wastewater from the city of Madison, treated by the Madison Metropolitan Sewerage District (MMSD), affects the watershed's water quantity and quality via discharges through an effluent ditch that joins the Oregon Branch of Badfish Creek. Wetlands in this watershed include Grass Lake, Island Lake, and Hook Lake.



Shoreline erosion

Badfish Creek in Rock County has the dubious distinction of being one of the top watersheds in Rock County for soil loss, which is estimated at 9 tons/acre/year. Soil loss in the Dane County portion is more difficult to determine, but is estimated to be 8.3 tons/acre/year. MMSD has an ongoing monitoring program to track water quality in Badfish Creek. MMSD conducts biotic index monitoring of Badfish Creek tributaries semi-annually since 1983 and periodically conducts biotic index monitoring in selected tributaries to Badfish Creek (MMSD).

This watershed has a high susceptibility for groundwater contamination based on WDNR groundwater susceptibility mapping.

Table 1. Municipalities in the Badfish Creek Watershed LR07

Municipality	W/S#	County	1995 Population	2000 Population	Percent Growth 1995 - 2000
C. Fitchburg	LR07 LR08	Dane	17,266	20,501	18.7
V. Oregon	LR07	Dane	5,760	7,514	30.5
T. Oregon	LR07	Dane	2,848	3,148	10.5
T. Rutland	LR07	Dane	1,715	1,887	10.0
T. Porter	LR07	Rock	957	925	-3.3

MMSD serves the entire Madison metropolitan region with its direct discharge and pretreatment programs. The district's operations have undergone nine substantial upgrades, the ninth addition, which includes a new ultraviolet disinfection system and biological phosphorus removal, was completed in 1997. A 1996 inspection found MMSD in substantial compliance with its permit. The plant has a design load of 50 million gallons per day (mgd). In 1993 Verona was annexed into MMSD; the Verona wastewater treatment plant was operated by MMSD from January 1995 through July 1996, when connection of Verona's flow to the Nine Springs Wastewater Treatment Plant was completed. Beginning in the summer of 1998, MMSD will return a volume of effluent to Badger Mill Creek that is equal to the volume of wastewater pumped out of the Sugar River Basin and treated at the Nine Springs Wastewater Treatment Plant. MMSD has worked with WDNR and other stakeholders to develop a mutually agreeable plan for managing this effluent return program (MMSD). The plant currently discharges to an effluent ditch via an underground pipe from the Nine Springs plant about five miles away, at an average rate of 36-37 mgd.

MMSD has 130 acres of sludge lagoons in the watershed. From the 1940s through the 1970s solids from the treatment plant were sent to these lagoons. In 1979 MMSD initiated a sludge recycling program “Metrogro” through landspreading on adjacent farm fields. In the early 1980s, MMSD found PCB concentrations greater than 50 parts per million (ppm), which exceeds landspreading standards. Sludge from the plant no longer exceeds this limit. In 1993, the level of PCBs in the contaminated lagoons was approximately 170 ppm. Sludge containing PCBs above 50 ppm is stored in a segregated portion of the sludge lagoons. MMSD continues to removed sludge with low PCBs with the goal of emptying the low PCB areas of the lagoons.



MMSD overflow outfall

In about 1990, the sludge lagoons were placed on the U.S. Environmental Protection Agency's Superfund site list; the site is a low priority to USEPA and WDNR because tests indicate the PCBs are not moving off site. MMSD has established an advisory committee to remediate the PCBs. Management alternatives such as removal, stabilization onsite, incineration, etc. are being considered. In the past, it was envisioned the lagoons would be restored to their original wetland status. Prior to turning the lagoons into a bird sanctuary, PCB exposure to wildlife should be considered (DCRPC, 1990).

MMSD managed high flows during the heavy precipitation of spring and summer of 1993 and summer of 1996 through overflow to Nine Springs Creek. Overflow to Nine Springs Creek is under negotiation with WDNR through the Upper Sugar River Initiative (see Special Initiatives Section).



*Badfish Creek: straightened
with bottom algae*

Badfish Creek is formed by the confluence of its Oregon and Rutland Branches. Nearly 100 percent of the creek's entire length in Dane County has been ditched, straightened and widened. In contrast, in Rock County, the stream's natural morphology has been preserved. In the 1970s water quality was quite poor due to the large volume of effluent from MMSD and Oregon's treatment plant. Since then, MMSD has improved its treatment capabilities and thus the quality of its effluent; consequently, the quality of water in Badfish Creek has improved. Since 1983, more than 42 fish species have been observed in Badfish Creek (MMSD).



Dragonfly egg-laying. After mating, the male clasps the female below the head while she deposits eggs into the water.

Three MMSD reports document the improved water quality conditions of Badfish Creek. The first report, “Badfish Creek Data, 1989,” by James Fisher, discusses water chemistry changes since 1977. Biochemical oxygen demand (BOD), ammonia nitrogen, nitrite nitrogen and suspended solids have decreased while dissolved oxygen levels have increased in Badfish Creek and Oregon Branch over the period of study. Levels of total suspended solids (TSS) tend to increase at the downstream monitoring stations. It is estimated that MMSD and Oregon contribute less than 50 percent of the TSS just below Cooksville. BOD concentrations also increase downstream, indicating polluted runoff from surrounding farmland affects water quality in Badfish Creek. Based on the data and analysis, the Rock River appears to be unaffected by BOD levels in Badfish Creek.



Fish sampling crew

The second report is “Aquatic Macroinvertebrate Analysis On Badfish Creek 1981-1988” by Jeffrey Steven, MMSD research biologist. Steven collected aquatic bug samples over an eight-year period. He used a number of different techniques including Hilsenhoff Biotic Index, species richness, and similarity indices to analyze the data. The analysis indicates water quality improves with distance downstream from MMSD's outfall until the vicinity of Old Stage Road crossing Badfish Creek. In this area other factors, likely rural polluted runoff, control the quality of the stream's water. Steven compares his biotic index and other water quality findings against water quality data found in a 1960 study and concludes water quality in Badfish Creek is now about the same level as existed prior to MMSD's discharge to the stream. (For information about MMSD, see the discussion under the Yahara River and Lake Monona Watershed [LR08].)

MMSD points to four major improvements which seem to have enhanced water quality since 1983: riprapping three sections of the stream; addition of nitrification processes in the plant, which decreases ammonia discharges to the stream; changing disinfection from chlorine to ultraviolet, which eliminated chlorine and toxic by-products entering the stream; and reduction in levels of suspended solids and BOD in the treatment plant due to increased plant capacity and longer retention times for the effluent.

In the third report, “Update and Summary of Badfish Creek Data,” which is the fourth consecutive analysis of annual fish data from the creek, Steven (MMSD) observes that brown trout use the stream regularly (Steven, 1995). Trout have been reported as far downstream as the Highway 138 bridge at Cooksville. While white sucker continues to be the dominant fish collected, making up 40 to 70 percent of the sample, the abundance and diversity of fish in the stream has improved over time. Three new species were observed in 1995: emerald shiner, northern hog sucker, and white crappie, which brings the total fish species observed on the creek since 1983 to 36. The dominant fish observed include fathead minnow, green sunfish, spotfin shiner, yellow bullhead and common carp. Steven reports that lack of habitat, not water quality, is the limiting factor for increased species richness. The stream has been extensively channelized and the habitat simplified. Most streamside vegetation and physical features are largely uniform.



Recent modifications to MMSD's Wisconsin Pollutant Discharge Elimination System (WPDES) permit suspended effluent disinfection requirements during colder months. The public raised objections to this modification. A study commissioned by MMSD and performed by the University of Wisconsin on the effects of seasonal disinfection on bacterial indicators and pathogens in the creek did not, however, find health hazards to recreational users of Badfish Creek, both with and without effluent disinfection.

Badfish Creek is classified as a limited forage fishery from the confluence of the Oregon and Rutland Branches downstream to County Highway A. Below Highway A, the stream is classified as a warm water sport fishery. Badfish Creek, stream mile 12-13, is classified as supporting a limited forage fishery from the MMSD outfall to the Oregon Branch.



Central mudminnow

Oregon Branch originates in the village of Oregon and flows 10 miles southeasterly to its confluence with Rutland Branch to form Badfish Creek. Prior to the 1920s the stream was considered a marginal trout water, but habitat was destroyed by stream ditching and straightening. Stream mile 4 to 6 is classified as limited aquatic life in NR 104. The creek receives a noncontinuous discharge from the Oregon wastewater treatment plant. About one mile east of Oregon, the stream meets the MMSD effluent ditch and flow increases from about 2 cubic feet per second (cfs) to about 56 cfs, in part from the effluent and in part from base flow contributions. The Oregon Branch from the MMSD effluent ditch downstream to its confluence with Rutland Branch (stream mile 0 to 4) is classified as a limited forage fishery.



Brook stickleback

The Oregon treatment plant, located at the headwaters of the Oregon Branch, discharges to the creek, which flows a rate of $Q_{7,10}$ at .01 cfs, which is a noncontinuous flow. With the village of Oregon growing rapidly, the plant recently completed an upgrade that will handle increasing influent flows. The facility plan recommended upgrading plant capacity, sludge storage, and phosphorus removal (DCRPC, 1995).

Recent proposed urban development in and near the village of Oregon will increase stormwater and flood flows through the village to Oregon Branch, unless the village develops and implements an adequate stormwater management plan for new development.



*Fathead minnow:
drawing and photo*

A triennial standards review for this stream reach was conducted in 1990. In the 1980s tolerant and very tolerant insects dominated the stream, with a larger percentage of species intolerant to organic pollution found in the creek over time. The fishery is dominated by central mudminnows, brook sticklebacks, and fathead minnows based on fish shocking in 1983. The triennial review found MMSD's advanced nitrification process at its Nine Springs Plant, and thus its discharge to the Oregon Branch, substantially improved in water quality. This upgrade resulted in reduced ammonia concentrations and higher dissolved oxygen levels in Badfish Creek, which has translated into greater diversity and abundance of fish species and improved macroinvertebrate (insect) populations based on Hilsenhoff Biotic Index scores (Marshall, 1990). Incremental improvements in Oregon Branch's water quality are also documented by sampling conducted in 1990 (DCRPC, 1995) for dissolved oxygen, ammonia-nitrogen, total phosphorus and BOD₅.

Rutland Branch This small spring-fed stream, which joins with the Oregon Branch to form Badfish Creek, supports trout and is designated an Exceptional Resource Water. The stream has a sand bottom with muck in the lower reaches and gravel in the upper reaches. While some channelization has occurred, the stream appears to be restoring itself. WDNR has acquired property adjacent the stream and is interested in at least two additional acquisitions. One acquisition would protect the large spring at the creek's headwaters and the other acquisition would protect five major and numerous minor springs that feed that creek and support the trout. Rutland Branch's water quality threat from agricultural polluted runoff is surpassed only by the threat from development in the



Brown trout



*Rutland Branch:
straightened*

watershed and ponding of the springs. Some headwater springs have been already been tapped for ponds. WDNR will continue to pursue acquisition and/or other protection for these important sources of the stream's good to excellent water quality. WDNR South Central Region staff recommend that no new permits be issued that would affect this important spring system.

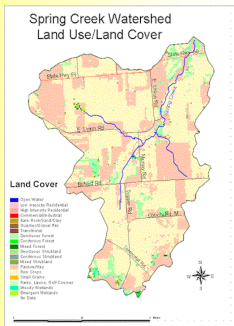
The last biotic index monitoring, conducted in 1989 by MMSD, indicated fairly poor water quality with significant organic pollution (index of 6.76). This represented a decrease in water quality from the previous year's monitoring, despite state ownership of the adjacent land. Continued development pressures and cropland erosion could have been the cause for this result. Fish tissue monitoring for PCBs and pesticides in whole carp, and brown trout fillets was conducted during the summer of 1990. A habitat evaluation rating conducted in May, 1996 where County Trunk a crosses the stream provided a "good" rating. At that site visit blue herons, spring peepers, and brown trout were observed (Fix).



*Frogpond Creek and
surrounding sedge meadow*

Frogpond Creek is a small spring-fed stream that flows eastward along the south edge of Dane County, then dips into Rock County before reentering Dane and emptying into Badfish Creek. Primary water quality problems are from polluted runoff and ditching and tiling in the headwaters area. The stream is buffered by significant wetlands in its headwaters. Several species of waterfowl which rarely nest in Dane County nest in this area. The U.S. Fish and Wildlife Service has purchased and now manages a portion of these wetlands as a Waterfowl Production Area. Composite biotic index values for Frogpond Creek, developed by MMSD and WDNR South Central staff, indicate water quality in the stream during 1988 and 1989 ranged from good to very good (1988, 4.85; 1989, 4.19). A 1996 habitat evaluation characterized the stream's habitat at the Willow Rd. crossing as "good" with a score of 109 on the WDNR Form 3200-68 Stream Habitat Rating.

Spring Creek is a small spring-fed tributary of medium grade (16 feet/mile) that connects with Badfish Creek near Cooksville. Historically, Spring Creek was managed for trout, but ditching and polluted runoff reduced it by the mid-1980s to supporting a warm water forage fishery. In 1990, Spring Creek reappeared as a trout water in the "Trout Fishing Regulations and Guide."



*Spring Creek
Watershed map from
http://www.epa.gov/r5water/wshednps/sc_watershed.htm*

As of 1996, Spring Creek is considered a Class III Trout Stream supporting brown trout; the stream's potential, however, is Class II. The effects of stream channelization and polluted runoff in the stream's six-square-mile agricultural watershed--particularly from streambank pasturing (erosion) and barnyard runoff--have taken their toll. Runoff from up-slope cultivated fields represents 95 percent of the total sediment load to streams in the watershed, which is 86 percent agricultural with row cropping the primary enterprise (83 percent of total acres). Up-slope runoff also contributes nitrate to groundwater (WDNR, 1993a).

Spring Creek was selected as a nonpoint source priority watershed project and a water resources appraisal was prepared in 1993 (WDNR, 1993b). For purposes of analysis, the stream is divided into two segments: from its headwaters to Murray Road is segment 1; east of Murray Road is considered segment 2. Segment 1 has been extensively channelized and thus exhibits habitat loss; by the mid-1950s the stream no longer supported trout. Recent land use changes have restored a buffer strip along this segment's



Spring Creek in March

streambanks, allowing development of riparian habitat and ecological recovery. Heavy sediment persists, however, on the stream bottom, which has accumulated during previous years' runoff and low flow conditions (WDNR, 1993b).

Segment 2 has retained its natural stream hydrology, but heavy pasturing and streambank erosion stifle the stream's functional values. Eroded streams and embeddedness reduce suitable habitat for insects and spawning fish (WDNR, 1993a). Streambanks contribute the remaining 5 percent of the overall sediment delivered to the watershed. The priority watershed plan's target goal is to reduce by 75 percent the total tons delivered from streambanks annually and restore 50 percent of the riparian habitat.

In addition, high bacteria and nutrient loads persist from poor feedlot and manure management practices. An 85 percent reduction in animal feedlot runoff from throughout the watershed is necessary to meet the priority watershed plan's stated objectives (WDNR, 1993a).

WETLANDS

Lake Barney Wetlands Complex is a fresh meadow and marsh complex that stretches for a little more than one mile south of Dane County Highway M. Barney lake is a popular migratory waterfowl and songbird stopover, and at one time supported whistling swans which regularly used the west end of the complex. Polluted runoff, grazing and cultivation have; however, degraded water quality and habitat over the years. Swans no longer use the area due to polluted runoff and recent dry years. Projected development in the area remains the greatest threat to the wetlands. Still, Lake Barney remains a popular waterfowl area.



The U.S. Department of the Interior owns the wetlands complex west of Lake Barney. The complex has been identified as a "Priority I" wetland for management and protection by the Dane County Regional Planning Commission. Eighty acres immediately adjacent to Lake Barney are owned and managed by the Department of Corrections. Cattle and horses have grazed the wetland banks; fencing is needed to prevent the trampling and grazing of wetlands. Shoreline fencing to exclude grazing from all but a small portion of the wetlands' shoreline would allow regeneration of degraded areas and reduce erosion.



Pitcher plant: leaf and flower

Hook Lake is one of the most important wetlands in Dane County, a northern forest-type bog, unique in southern Wisconsin and fairly undisturbed. Development along its south edge and potential adjacent residential development threaten this wetland's high quality water and habitat resources.

Resources of Concern (LR07)

WDNR's Heritage Resources Database indicates that the following water-dependent endangered, threatened or special concern species and/or communities have been sighted in this watershed within the last 20 years.

Table 2. Endangered, Threatened or Communities of Special Concern

Plant Community	Location	Description/Indicator Species
Emergent Aquatic, Open Bog	Union Bog	An undrained wetland in the late Wisconsin Drift Region north of the Cary Terminal Moraine. The tract is owned privately. Area includes leatherleaf bog-cattail marsh with nearly continuous cover of sphagnum moss. Leatherleaf dominates 2/3 of the tract; sedges and cottongrass are common beneath this cover; at edges, cattail-dominated marsh dominates. Past disturbances, grazing.
Shallow, Hard, Seepage Lake, Emergent Aquatic habitat	Grass Lake (near Bass Lake)	Shallow landlocked depression with sedges, blue joint grass, cattail and other typical marsh plants; 20 acres of open water; habitat for marsh-nesting songbirds, waterfowl. Part of tract is a Federal Waterfowl Production Area.
Lake-soft, bog, Northern Wet Forest, Emergent Aquatic, Southern Sedge Meadow, Bog Relict, Southern Dry-Mesic Forest	Hook Lake Bog	Hook Lake Bog ranks as one of the highest quality wetlands in Dane County in terms of uniqueness, size and natural area quality. It is a soft water bog lake, unusual in Southern Wisconsin, surrounded by a floating bog mat and marsh. It is the only known site in the county for round-leaved sundew, pipewort, and the bog sedge, <i>Carex tripsperma</i> . Interspersion of bog, emergent aquatics and open water provides excellent cover for a diverse fauna. Birds reportedly nesting here include black tern, sora, snipe, green heron and wood duck.
Lake-shallow, hard seepage, Emergent Aquatic, Southern Sedge Meadow	Northern Grass Lake	This lake features a deep-water marsh, sedge meadow and open water situated in the basin of a glacial pothole. A floating mat of wiregrass sedge (<i>Carex lasiocarpa</i>) is present as is a diverse assemblage of emergent, submerged and floating leaved aquatic plants. Some of the species found here are pickerelweed, spatterdock, white water lily, bladderwort, and pondweeds. Sora and american bittern breed in the marsh and muskrats are abundant.



Leatherleaf



Round-leaved sundew, a carnivorous plant

RECOMMENDATIONS

- 1 The Madison Metropolitan Sewerage District (MMSD) should continue its monitoring program in upper and lower reaches of Badfish Creek, the Yahara and Rock rivers.²
- 2 The Lower Rock River Basin Team and Dane County Land Conservation Department should conduct water quality monitoring and land use appraisal in the Rutland Branch sub-watershed to determine the source(s) of pollution.¹
- 3 WDNR and stakeholders should work together to purchase, with the Stewardship Fund or other sources, the major springs of the Rutland (Anthony) Branch to protect its high water quality and regionally unique trout habitat.^{1, 2}
- 4 The Lower Rock River Basin Team with the U.S. Fish and Wildlife Service, Dane County, and conservation groups, should evaluate the land in the Frogpond Creek headwaters for purchase under the Stewardship Fund to enlarge and protect the stream's buffer areas (via Waterfowl Production Areas) and adjacent land.^{1, 2}



Cottongrass



Wood duck

- 5 The Department of Corrections should work with the Lower Rock River Basin Team to apply for a Lakes Program Protection Grant to purchase and construct fencing to eliminate shoreline grazing around Lake Barney, which would enhance water quality and protect habitat.²
- 6 The Department of Corrections should work with the Lower Rock River Basin Team to restore riparian vegetation and develop nesting boxes on lake in conjunction with wildlife management on Lake Barney.²
- 7 The Lower Rock River Basin Team with the cooperation of Dane County and local conservation groups, should evaluate the Lake Barney wetlands complex for purchase under the Stewardship Fund or a Lakes Protection Grant.^{1,2}
- 8 The Lower Rock River Basin Team should evaluate property along Spring Creek for possible easements or purchase under the priority watershed project.¹
- 9 WDNR should designate Hook Lake as an Exceptional Resources Water.¹



Northern hog sucker

- 10 The Lower Rock River Basin Team should evaluate additional land around Hook Lake for possible purchase under the Stewardship Fund or a Lake Program Protection Grant to buffer and preserve this significant wetland complex.¹
- 11 WDNR should consider reclassifying Spring Creek if proposed stream classification guidelines are passed.¹
- 12 The Village of Oregon should upgrade their ordinance to be consistent with the technical provisions of the Dane County Ordinance Chapter 14.²
- 13 WDNR Division of Water staff should not issue new permits that would negatively affect the Rutland Branch springs system.¹
- 14 The Village of Oregon, with the assistance of Dane County Regional Planning Commission, Dane County Land Conservation Department and WDNR should develop a comprehensive stormwater management plan and ordinance.²

1. These recommendations are a basis for work planning or other decisions, which must be approved by the appropriate DNR division administrator (the recommendations are a starting point for the work planning process).
2. These recommendations are advisory to the public, local governments, lake management organizations, and other groups or agencies. These recommendations are not binding. No statutory or codified requirements exist



White crappie

ACKNOWLEDGMENTS

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Virginia Kline's Vegetation of Wisconsin Collection (all botanical photos).



Yellow bullhead

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Brown trout fingerling



White water lily



Muskrat

Table 3. Streams in the Badfish Creek Watershed (LR07)

Stream Name	WBIC	County	Length (Miles)	Existing Use (Miles)	Potential Use (Miles)	Supporting Potential Use (Miles)	Current Codified Use	303(d) Status	Use Impairment		Data Assessment	Data Level	Trend	References
									Source	Impact				
Badfish Creek	0799500	Dane Rock	0 - 12	WWSF/12	Same	Part - Thr	WWSF*	Y	HM, CL, SB, PSB, DEV, BY, PSM	DO, TURB, HAB, NUT, FLOW	M	B4 H2 C4	S	4, 7, 9, 10, 17, 18, 23, 39, 57, 58, 63
			12 - 13	LFF/1	Same	Part	LFF							
Frog Pond Creek	0800100	Dane Rock	7	WWFF/7	Same	Part - Thr	WWSF*	N	HM, NPS	FLOW, HAB, TURB	M	B2 H2 C1	S	4, 10, 12, 17, 23
Oregon Branch	0800700	Dane	0 - 4	LFF/4	Same	Part - Thr	LFF	N	HM, NPS, URB, NUT, PSM	FLOW, HAB, DO, TURB, TEMP, SED, MIG	E	B2 H2 C2 T2	D	10, 12, 23, 39, 78
			4 - 6	LAL/2	Same	Part - Thr	LAL							
Rutland Branch	0801000	Dane	2	COLD III/2	COLD II/2	Part - Thr	ERW	N	HM, NPS	HAB, SED, TURB, NUT, TEMP, DO	M	B2 H2 C1	S	10, 12, 17, 23, 20, 78, 79
Spring Creek	0799900	Rock	3	WWFF/3	COLD/3	Not	WWSF*	Y	HM, NPS, CL, SB, BY	HAB, TURB, SED, NUT, TEMP, DO	M	B4 H4 C3	I	4, 17, 77, 78, 81
8 Unnamed Streams			14											

Table 4. Lakes of the Badfish Creek Watershed (LR07)

Lake Name	County	Town, Range, Section	WBIC	Surface Area (Acres)	Max Depth (ft)	Mean Depth (ft)	Lake Type	Winter kill	Access	SH	Hg	Mac	LMO	TSI	TSI Class	Lake Plan Prot	P Sens	Impairment		Comments
																		Source	Impact	
Barney Lake	Dane	T06NR09E S34	0777300	27	6	--	SE	Y	--	--	GA	--	--	--	--	--	II B	NPS, HM, PSB	TURB, HAB	cattle & horses grazed down bank; Waterfowl Production Area - west edge
Bass Lake	Dane	T05NR10E S24	0800400	69	8	--	--	Y	W	--	GA	--	--	--	EU	--	II B	NPS	ACC, HAB, TURB	Plans exist to build golf course nearby
Grass Lake	Dane	T06NR10E S30	0800900	48	9	--	SE	Y	--	--	GA	--	--	--	EU	--	--	--	--	--
Grass Lake	Dane	T05NR11E S18	0776300	10	5	--	SE	Y	--	--	GA	--	--	--	--	--	--	--	--	--
Grass Lake	Rock	T04NR11E S19	0776100	16	6	--	SE	Y	--	--	GA	--	--	--	--	--	II Ins	--	ACC	--
Hook Lake	Dane	T06NR10E S29	0776800	125	4	--	SE	Y	W	R	GA	--	--	--	--	--	II B	NPS	HAB, NUT	--
Island Lake	Dane	T05NR10E S03	0776900	20	5	--	SE	Y	X	--	GA	--	--	--	--	--	II B	--	--	10+acres fresh meadow, Federal Wildlife Area

